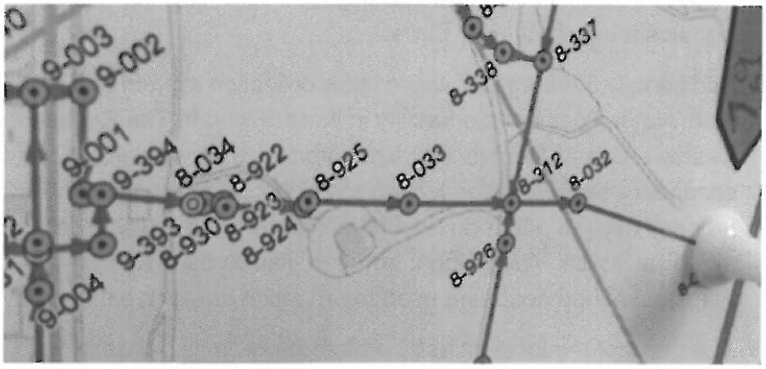

City of Flagstaff

Local Limits Study

Prepared for: The City of Flagstaff

Prepared by: GHD Inc.

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Executive Summary

This executive summary documents the Local Limits analysis completed for the City of Flagstaff Rio de Flag Water Reclamation Plant and the Wildcat Hill Wastewater Treatment Plant under the direction of the City of Flagstaff. This report is subject to, and must be read in conjunction with, the limitations set out in Section 1.2 and the assumptions and qualifications contained throughout the Report.

Background

The City of Flagstaff, Arizona depends on a wastewater treatment plant and a water reclamation facility to meet the communities wastewater treatment needs. The wastewater treatment plant is the Wildcat Hill WWTP, which can treat approximately 6 MGD of wastewater per day. This advanced treatment facility processes including screening, primary sedimentation, secondary sedimentation, Fixed-Film Activated Sludge process (IFAS), disinfection and filtration. The effluent discharged from the facility is used for irrigation in portions of the east area of the City or are discharged into the Rio de Flag River. Energy recovery is also implemented at the Wildcat Hill WWTP which converts methane gas generated from wastewater treatment processes to electricity to power equipment and reduce electrical power usage at the facility. The Wildcat Hill WWTP accepts wastewater flow from the City of Flagstaff Collection system that includes domestic, commercial, non-significant industrial and significant industrial user flows.

Additionally the Flagstaff wastewater collection system conveys sludge discharged from the Rio de Flag Water Reclamation Facility in west Flagstaff. The Rio de Flag WRP is a 4 MGD advanced wastewater treatment facility. That process uses screening, primary sedimentation, aeration, secondary sedimentation known at the Bardenpho process which is a two-stage anoxic and aerobic process designed to reduce nitrogen content in the wastewater. The process also includes filtration, and disinfection. The effluent from the plant is used for irrigation in west Flagstaff and parts of east Flagstaff. When not being used for irrigation, the effluent is discharged into the Rio de Flag.

The basis of the local industry pretreatment limits began in 1993 when the first major study was completed of the Wildcat Hill WWTP for that purpose. The original study was re-evaluated in 2002 which developed three groups of pollutants to be addressed in the pretreatment program, which included 1) Metals and organics with "interim" limit status, 2) Metals with "final" status, and 3) design parameters with "interim" status. Later the 2002 study was evaluated in 2006 to consider local environmental considerations and to add the Rio de Flag Water Reclamation Plant to the local limits analysis. The 2006 report specifically provided 1) a recommendation for nine (9) pollutants of concern, 2) confirmed the implementation of the final limits for chromium and zinc, and 3) evaluated the design capacity for BOD and TSS.

The current local limits are based on the recommendations in the 2006 study. Since the completion of that there have been changes to the wastewater treatment processes, the wastewater plants effluent limits, plus changes to the industries that discharge to the wastewater collection system. It was projected that the evaluation of such changes could result in the need for revisions to the current local limits for the purpose of mitigating interference or pass-through problems that discharges may have on the existing wastewater treatment facilities ability or capacity to treat wastewaters to required qualities for reuse or discharge.

This study considered both the Wildcat Hill WWTP and the Rio de Flag WRP with the goal to establish common local limits for all dischargers to the extent practical. This study followed the US EPA Local

Limits Development Guidance (2004) and other EPA pretreatment and local limits documents and literature.

Purpose

In accordance with the United States Federal Regulation, Title 40—Protection of Environment, Chapter 1 – Environmental Protection Agency (EPA), Subchapter N – Effluent Guidelines and Standards, Part 403 – General Pretreatment Regulations for Existing and New Sources of Pollution, (40 CFR 403) publically owned treatment works are required to develop an approved pretreatment program, and must develop and enforce local limits to protect against pass through and interference. The US EPA also recommends that each POTW re-evaluate its local limits at least every five years to ensure a firm technical basis and address changing conditions.

The City of Flagstaff Utilities Department aimed to update the local limits for discharges to the City's wastewater system based on that guidance and this evaluation will satisfy that recommendation by completing a re-evaluation of current conditions and providing revised or new recommendations for the City of Flagstaff Local Limits pretreatment program, based on current conditions and specific POTW considerations.

Additionally the local limits are a tool for the City to protect the health and safety of WWTP and collection system workers, and to protect the capital investments in the wastewater treatment facilities.

Local limits are typically applied to significant industrial users, permitted and regulated individually by a numerical local limit enforced by the City of Flagstaff Industrial Pretreatment Department. Additionally other control measures such as best management practices could be implemented in addition to, or in place of a numerical value, when a local limit is not effective at managing pollutant discharges to the WWTP. Such BMP could be applied system wide, or individually.

The objects of this evaluation were to 1) identify the pollutants of concern, 2) determine the maximum allowable headworks loading, 3) determine the allowable industrial load 4) determine the uniform pollutant discharge concentrations and 5) provide recommendations to update the local limits based on current conditions, and system needs anticipated in the next five years.

Pollutants of Concern

GHD identified thirty-three (33) Pollutants of Concern (POC's) by a comparison of pollutant concentrations revealed in sampling completed by GHD and from reporting of regulatory sampling in the collection system, at SIU's discharges and at the wastewater treatment facilities. The POC's were developed from a greater list of pollutants identified in the AZPDES and APP permit limits, national POC's, Arizona SWQS, Arizona AWQS, bio-solids limits, plant capacity limits, treatment or collection system inhibition limits, and fume toxicity and Explosivity considerations for treatment plant worker health and safety.

Recommended Local Limits Update

Based on the results of this study, GHD has technically developed recommendations for three types of local limits, including:

- "Final" local limits which are recommended to remain until the system is re-evaluated as a whole, tentatively during the next local limits update;
- "Interim" limits which are guiding limits while the POTW or City investigates other sources of pollutants and ways of controlling those sources; and

- "Alert" limit, which if a Significant Industrial User exceeds the alert limit, it is recommended that the POTW or City conduct an evaluation to determine if that discharge was having impact on the plant effluent quality, and if pass-through or interference was occurring and leading to compliance concerns at the POTW, then voluntary correction or enforcement action is recommended.

The updated recommended local limits based on the content of the study are presented in the table below.

Recommended Local Limits Update Summary

		Exist. Local Limit	Recommended Local Limit	Status
POC No.	Inorganics			
1	Arsenic	0.26 mg/L	0.31 mg/L	final
2	Barium	-	-	-
3	Cadmium	-	-	-
4	Chromium, total	-	-	-
5	Chromium, VI	-	-	-
6	Copper	0.28 mg/L	0.15 mg/L	final
7	Cyanide	0.24 mg/L	-	-
8	Lead	0.041 mg/L	-	-
9	Molybdenum	-	-	-
10	Mercury	0.017 mg/L	BMP	interim
11	Nickel	-	-	-
12	Selenium	-	0.015 mg/L	final
13	Silver	0.3 mg/L	-	-
14	Sulfides	-	4.5 mg/L	final
15	Zinc	1.4 mg/L	-	-
16	HEM [a]	-	(152 mg/L) *(Qmax)=Load lb/day	interim
Volatile Organic Compounds (VOCs)				
17	Methylene chloride	0.0041 mg/L	4.1 mg/L	final
18	Toluene	4.2 mg/L	0.14 mg/L	final
19	Benzene	0.35 mg/L	0.102 mg/L	final
20	Total Trihalomethanes	-	0.32 mg/L	alert
21	Bromodichloromethane	-	0.08 mg/L	alert
22	bromoform	-	0.08 mg/L	alert
23	Chloroform	-	0.08 mg/L	alert
24	dibromochloromethane	-	0.08 mg/L	alert
25	Bromide	-	0.05 mg/L	alert
Semi-volatile Organic Compounds (SVOCs)				
26	Bis(2-ethylhexyl) phthalate (DEHP)	-	-	-
Pesticides				
27	Aldrin	-	Prohibited	Prohibited
Compatible Pollutants				
28	BOD	1,000 mg/L Surcharges if > 400 mg/L	-	-
29	TSS	1,200 mg/L Surcharges if > 400 mg/L	-	-
30	Ammonia	-	-	-
31	Nitrate	-	-	-
32	Total nitrogen	-	173 mg/L	final
33	pH	-	6.5 < pH > 11.0	final

[a] Qmax = the maximum daily flow for each specific SIU, as permitted by IWS